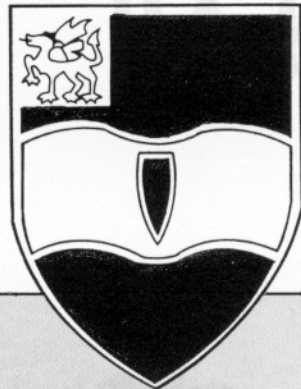


Movement-to-Contact

“Red Dragons” in Operation Desert Shield



Line of Departure Time 0600—The 2d Brigade (Blackjack), 1st Cavalry Division, crosses the line in a movement-to-contact with three task forces abreast in a brigade wedge formation. Expected enemy heavy contact is 80 kilometers away.

The brigade moves out on time at a very calculated 10 miles per hour. The speed, dictated by the brigade commander, enables all combat systems and key combat service support vehicles in the brigade battle task force to keep in

formation. The 3-82 FA Red Dragons, the brigade's DS [direct support] artillery battalion, moves tucked behind the brigade's combat vehicles.

An hour later, brigade scouts suddenly report contact with

an enemy screening force. The brigade continues to move as the situation develops. The screening force becomes what appears to be a battalion-sized security force.

The brigade comes to a halt as the commander orders a task force to maneuver on the enemy force. The FSCOORD [fire support coordinator], collocated with the brigade commander in his M113, orders the Red Dragons to halt immediately and occupy firing positions.

“Red Dog, Red Dog, azimuth of fire 6200” goes out simultaneously over the battalion command net and voice fire net. Every key leader in the battalion knows the battalion is stopping to fire. In less than 10 minutes, all firing batteries are occupied on common direction and are massing accurate, predicted fires on an enemy tank battalion.

If necessity is the mother of invention, then Saudi Arabia is the place with the



by Lieutenant Colonel Kenneth R. Knight and Captains Henry S. Larsen, Allen W. Batschelet and Ronald A. Hoskinson

This article was written before the beginning of the Desert Storm ground war by the battalion and three battery commanders in the 3d Battalion, 82d Field Artillery (3-82 FA), 1st Cavalry Division, who developed the battery wedge formation concept for artillery movement in Operation Desert Storm. The 3-82 FA Red Dragons were deployed in Saudi Arabia from early October 1990 through Desert Storm.

“needs.” For the 3-82 FA, the mission is unchanged—provide DS artillery fires in support of an armored brigade. What has changed are the parameters the battalion operates under. Those have, in turn, caused us to alter our methods of fire support, including occupation of posi-

tions using the global positioning system (GPS) or the position and azimuth determining system (PADS).

The firing battery commanders were given these parameters:

1. Move directly behind the maneuver battalions in a movement-to-contact

scenario. Be prepared to occupy and fire on contact.

2. Move with platoons in wedges, battery in column (see Figure 1). Sustain a rate of speed of 10 miles per hour over long distances. Be able to sprint short distances at 20 miles per hour.

3. For command and control purposes, occupy as a battery and be prepared to deliver accurate, predicted fires in less than 10 minutes. Included in this time is safety verification and establishing survey control.

4. Batteries A and C each had a PADS vehicle attached. B Battery had a survey team equipped with the GPS AN/VSN-8.

Movement

A brief note on navigating in Saudi Arabia: the majority of the area is rolling sand dunes without the wadis found at the National Training Center (NTC), Fort Irwin, California. The few terrain features usually aren't on the map.

the one exception to this are man-made features. The way to navigate is by measuring distance and direction.

To help navigate, battery commanders have a long-range aid to navigation (LORAN) device. This off-the-shelf item is an excellent navigational aid that gives longitude and latitude to a location and also provides direction and distance to the next location of travel. Using the LORAN, the Red Dragons determined longitude and latitude for templates used to quickly obtain a six-digit grid reading from a military map. But the LORAN doesn't have the degree of accuracy needed to shoot artillery.

The batteries caught on quickly to moving in wedge formations. The fire direction officers (FDOs) in the M577 fire direction center (FDC) tracks controlled their platoon wedges using standard hand and arm signals, flags and AN/PRC-127 radios. The battery commander controlled the battery formation

and issued directional guidance to the lead FDC, as needed. The second platoon followed in the first platoon's tracks, minimizing vehicle risk if it encountered a minefield.

Because of the need to move at 10 to 15 miles per hour, the M577 couldn't tow a trailer in soft sand. The M577s averaged 15 miles per hour maximum speed with trailer and 20 miles per hour without trailer in soft sand. This caused the FDC sections to cross-level their combat loads with the howitzer sections in their platoon. The FDCs' B-Bags and a majority of their food and water were stored throughout the platoons.

The Red Dragons brought the M332 ammunition trailers to Saudi Arabia, which can be towed behind an FA ammunition support vehicle (FAASV) at rates of 25 to 30 miles per hour. The M332 ammunition trailer hauled the three-day supply of water and rations and 50 percent of the section's cots, a necessity in the desert.

The soft sand also caused the tracked vehicles to lose some of the fuel range they usually had on hard surfaces. In the sand, they get about two-thirds of their listed vehicle range. The formation consisted entirely of tracked vehicles and high-mobility multipurpose wheeled vehicles (HMMWVs).

The battery maintenance contact team had an M578 recovery vehicle and a HMMWV. Prescribed load lists (PLL) were cross-leveled on the FAASVs, and locator cards told the motor sergeant where to find parts, such as gun radiators and fan towers.

The battery first sergeant controlled the battery trains, which were consolidated at the battalion level under the senior firing battery first sergeant. Because of the M35 2 1/2-ton truck's extremely poor performance in the soft sand, the battery trains had to link up with the battery using the road network and contact points.

The 3-82 FA innovations began primarily with the battery occupation.

Occupation with GPS

When the maneuver forces made enemy contact, the batteries received orders from the brigade fire support coordinator (FSCOORD) or battalion S3 to occupy immediately (see Figure 2). Unlike hipshoots at home station, there's no better location or terrain for immediate occupation than the Saudi

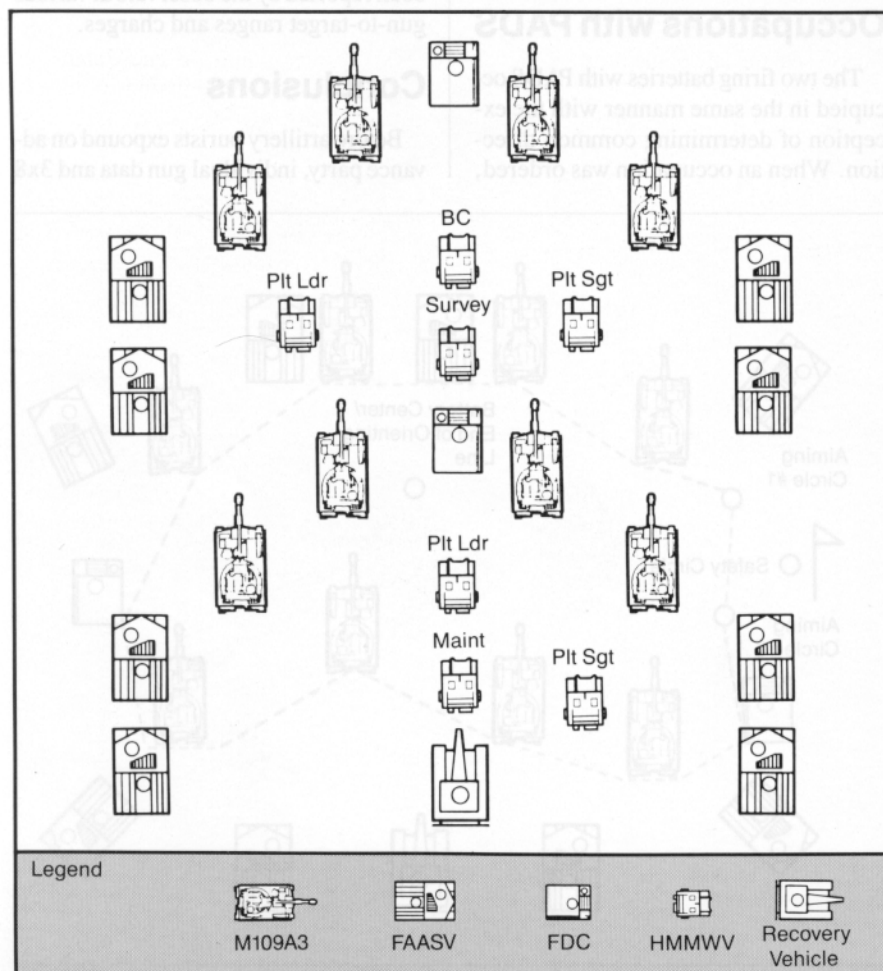


Figure 1: Movement in Wedge Formation. The platoons moved in wedges with the battery in column, all tucked behind the maneuver brigade's combat vehicles.

desert—the terrain is the same for miles. The platoons occupied positions 150 to 200 meters apart in their wedge formations with the trail platoon behind the lead platoon along the azimuth of fire.

As shown in Figure 2, the two gunnery sergeants, first platoon leader and battery commander moved to the left side of the formation, centered between platoons. The first platoon gunnery sergeant set up aiming circle #1 magnetically and laid the second aiming circle (#2). At the same time, the second platoon leader, FDOs and platoon sergeants guided the guns into position with M2 compasses. The FDCs swung to opposite sides of the battery.

A “hot loop” was run from gun to gun with guns 4 and 8 running wire to the lay circles. The two lay circles then laid their platoons using PRC-127s as the primary means of communication and the hot loop as a secondary means. Howitzers were easily identified by 8-inch luminous numbers painted on the inside of the gunner’s door, which were visible during occupations.

The first platoon leader set up and magnetically oriented the safety circle over the orienting station (ORSTA) grid established by the GPS. The safety circle bumped with lay circle #1 and conducted a simultaneous observation (SIMO) with the battalion’s master station or either A or C Batteries—GPS doesn’t provide an accurate azimuth to the end of orienting line (EOL). For the SIMO, the battery commander’s driver acted as radiotelephone operator (RTO) while the platoon leader’s driver marked the EOL.

Once the SIMO was complete, the battery commander compared the survey azimuth to the magnetic azimuth and adjusted the azimuth in the battery computer system (BCS), using the right add, left subtract (RALS) method. The battery wasn’t relaid. The safety circle was marked with a green flag to enable gunners to easily identify it. The survey team, using GPS, determined the battery center and data to one of the guns to be used as the adjusting piece.

Immediately after being laid, each gun obtained a referred deflection to the safety circle and sent a runner to the safety circle to get checked out as safe. This procedure reduced transmissions over the radio and wire nets and cut down the total ready-to-fire time significantly.

Each platoon leader or his platoon sergeant monitored the gun line to ensure

a smooth occupation. The battery commander gave both FDC representatives ORSTA location data, data to battery center and adjusted azimuth of fire and then designated the hot FDC that would control the battery. The FDCs reported READY:X with the battery center to the tactical fire direction system (TACFIRE) at battalion and computed the base-piece gun data and average battery muzzle velocities before the battery was laid and safe.

During night occupations, the three circles each were marked with three unique colored lights. Each platoon’s howitzer sections also had their own unique color to identify the section.

Because one platoon FDC controlled the battery during fire missions, the “cold” FDC monitored the platoon’s ammunition count and tracked the fire missions. The cold platoon FDC could immediately pick up control of the battery if the hot FDC had any problems.

Occupations with PADS

The two firing batteries with PADS occupied in the same manner with the exception of determining common direction. When an occupation was ordered,

PADS established an ORSTA where the safety circle was positioned and an EOL at the battery center.

The battery was laid by the lay circles that were set up in the same manner as mentioned previously. The safety circle bumped with the lay circle and followed the lay of the battery, recording the referred deflections to each piece. The safety circle compared the magnetic lay azimuth with the survey data from PADS, and the azimuth of fire was adjusted (again using the RALS formula) and given to both FDCs for input into the BCS and backup computer system (BUCS).

Both the GPS and PADS occupation procedures were tested during live fire at ranges in Saudi Arabia. These procedures for occupying as a battery take between six to nine minutes to get accurate, predicted fire down range, including conducting the SIMO. Good effects on target and battery sheafs have been reported by the observers at various gun-to-target ranges and charges.

Conclusions

Before artillery purists expound on advance party, individual gun data and 3x8

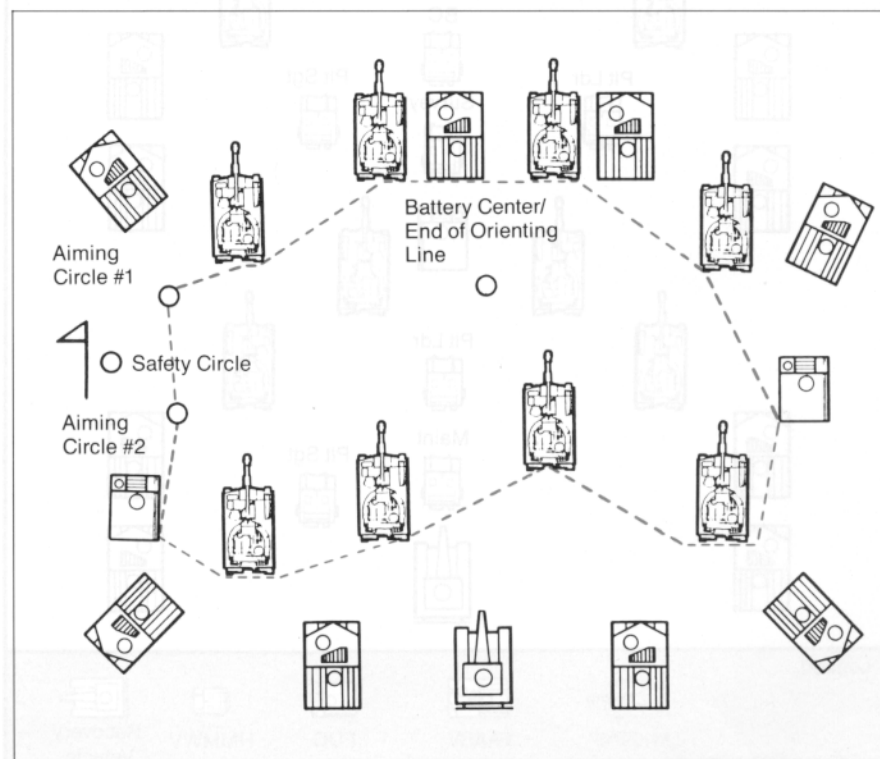


Figure 2: Movement-to-Contact Occupation. When the brigade makes enemy contact, the batteries occupy positions immediately. The platoons occupy 150 to 200 meters apart in their wedge formations with the trail platoon behind the lead platoon along the azimuth of fire.

platoon concepts, remember the parameters of the mission. During a movement-to-contact with firing batteries immediately behind the maneuver forces, if we had used advance parties, they would have been in soft-skinned vehicles positioned with M1A1 Abrams tanks and M2 Bradley infantry fighting vehicles. Their survivability would have been doubtful, and the firing platoons would have been in their area before they could have completed any substantial preparations. Pre-planned firing positions were almost impossible to determine over the estimated long distances.

Getting individual gun data is important and is something to strive for when time is available to get subtense and vertical interval to each piece. Then you enter this information into the BCS, compute terrain gun position corrections (TGPCs) and wait for the gun display units (GDUs) to tie in with the FDCs. We followed these steps if the battery remained in position long enough.

The platoon-based portion of 3x8 doctrine has its place in many scenarios. But the battery wedge formation increased

our responsiveness to the maneuver elements and positioned the battery's senior officer in the critical place to command and control his unit during the fluid movement-to-contact mission.

The mission, enemy, terrain, troops and time available (METT-T) our battalion faced in Operation Desert Shield dictated the parameters under which we operated. Operation Just Cause in Panama, December 1990, called for different operational parameters. And, perhaps, a future contingency someplace else in the world will call for yet another set of parameters.

Regardless, Field Artillerymen must be technically and tactically competent and *flexible* to provide lethal, accurate fires—on time, anywhere their mission takes them.



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VIEWS FROM THE BLOCKHOUSE

FROM THE SCHOOL

Combined-Arms Training Strategy

The Army is developing a Combined-Arms Training Strategy (CATS) that identifies training events, their frequency of occurrence and the supporting resources. At the Army level, it'll allow senior leaders to justify resources based on how units train. At the unit level, it'll give commanders a recommended method for attaining their training goals.

Why are we doing this?

CATS is the result of guidance from the Chief of Staff of the Army (CSA) in December 1988. The CSA wanted an efficient plan to chart our force training effort through 2007. This plan also would serve as the justification for the FY 92-97 Program Objective Memorandum (POM) for the budget and future programming and planning documents.

To provide the justification for force training, CATS had to portray unit training and associated resources in a suc-

cinct, standard format. Because the format is succinct, it also can function as a training management tool.

How will it affect me?

CATS won't fundamentally change how units train. It'll simply provide an additional tool for a commander to use to manage his unit's training program. A unit's mission essential task list (METL) and an assessment of training will identify "what" needs to be trained. CATS will provide the commander a recommendation of "when," "how" and "with what" to train. It does this by identifying the events, the frequency of occurrence, and the resources needed to train the event for a particular type of unit. The identification of available training aids, devices, simulators and simulations (TADSS) also will give the commander training alternatives.

What does it look like?

As part of the CATS development process, the Training and Doctrine Command (TRADOC) developed a format to depict unit training strategies. The strategies (battalion and below) have two major components—gunnery and maneuver. The matrix used to display each component will look similar to an annual training calendar. The columns across show training events while the rows down show the unit echelons (crew through battalion) and resource categories (operational tempo resource, ammunition, TADSS, training land, training range and unique requirements).

The goal of the gunnery component is to successfully demonstrate the artillery team's ability to perform all delivery of fire METL tasks and related non-firing tasks. Several nodes make up the artillery team: weapon; target acquisition (TA);